Chapter 1

Introduction

1.1 Introduction

Increasing usage in computers and data communication systems in the world has made a huge impact on learning culture. Most organizations are moving towards distance learning via e-Learning systems, which is a very cost effective methodology. The facilities provided by technological advancements have enabled us to access knowledge available around the globe via internet. Kerry O'Regan, in his research on emotions and e-learning [37] points out that "around 2 million students are now taking courses online from higher education institutions in the United States". We can expect a similar situation in Sri Lanka as communication systems are developed rapidly and access to such systems are becoming cheaper and cheaper.

In a knowledge centric environment, global competitiveness is a key issue that has to be addressed in affective and productive learning. Understanding study material, analyzing, application of knowledge gained and verifying the correctness of what is understood are made available in these systems easily.

However, direct contact with the human resource person delivering the study material, which was available in the traditional system is absent in this system. A human resource person directly interacting with students has the benefit of observing students, analyzing their behaviours and **emotions** and if needed, changes their course content or presentation method accordingly, in an effective manner.

Emotions play a key-role in human mind in what ever they are involved in, which includes learning. It is very important to be in a positive emotional state while learning since it helps people to grasp new ideas.

Incorporating this ability to an elearning system will enhance learning productivity. Various researches are carried out all around the world in the field of emotions in education [25, 7, 24, 21, 28]. These researches vary in different fields such as education, psychology and computing.

According to the above and many other researches, a learner's emotional state directly impact their studies. In simple terms, when a learner is sad or angry which are negative emotions , the power of learning drops out significantly and vice versa. If an e-learning system can identify the student's emotions by any means and adjust it self accordingly to provide better teaching material suitable for the student considering the emotional state he is in, the effectiveness of the system will allow the learner to perform well.

In this project, an attempt is made to identify suitable parameters that can be used to identify parameters based on the interactions of a learner with the e-learning system.

1.2 Aim and Objectives

Aim

1. Develop a framework that can identify quantitative parameters obtained using interactions that affect emotions in learning in an e-Learning environment.

Objectives

1. Critical study about e-learning systems, emotions capturing in human computer interactions.
2. Critical study about the connection between emotions and learning.
3. Design and develop the framework.
4. Test and evaluate the approach.
5. Prepare the final documentation.

1.3 Solution

The research is carried out to identify quantitative parameters obtained using interactions that affect emotions in learning in an e-Learning environment. Users of the system would be students who participate in the e-learning system for studies, administrators and lecturers. A web based system is implemented for e-Learning purposes and system administration.

Student's interactions with the system are captured. The interactions captured from input devices, keyboard and mouse. Various parameters are defined based on the input interactions. They are used to determine the **relevant** parameters that explain emotional states of a student who engages in constructive learning. The output of the system is the analysis results presented as a report.

The solution consists of two components and the functionality of main component being the data capturing, analyzing and reporting on selected relevant parameters. Figure 1.1 shows a block diagram of the main component. Multiple Regression Analysis is used to carryout the analysis. Parameters are based on various theories developed in various researches. Also adding new parameters is allowed for subjects as preferred by lecturers.

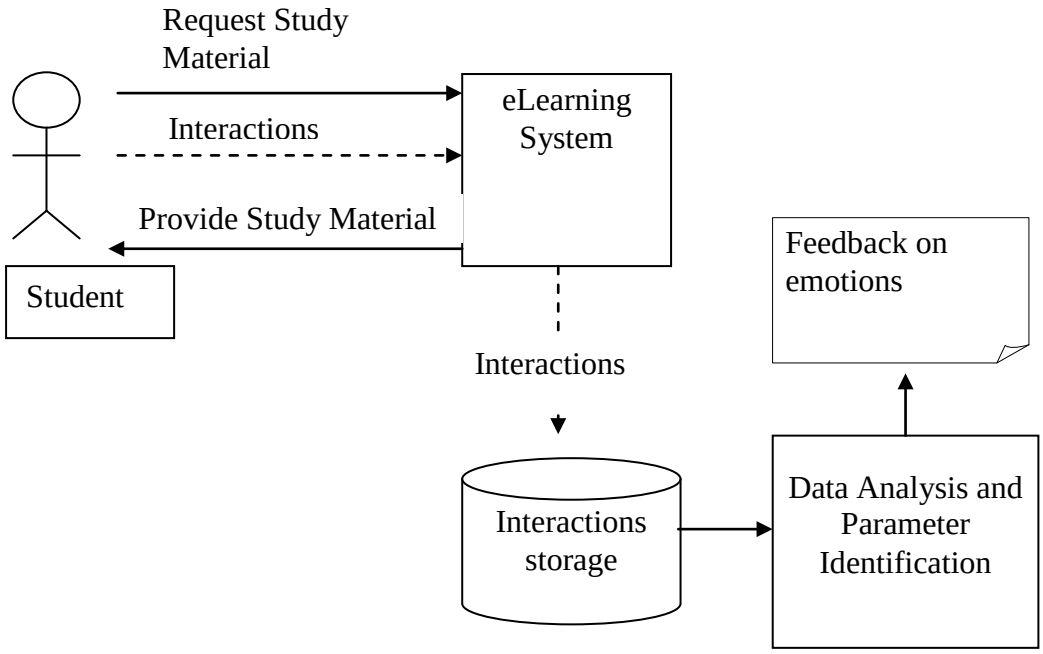

Figure 1.1 Data Capturing, Analyzing and Reporting system

1.4 Structure of the dissertation

Chapter 2 describes the problem domain and literature review

Chapter 3 is on the theoretical basis of the approach in developing the framework

Chapter 4 explains the approach used to derive at the solution

Chapter 5 is the approach to analysis and design of the experiment to evaluate the framework

Chapter 6 is on software system requirements analysis

Chapter 7 is on design and implementation of the framework

Chapter 8 gives details on testing and evaluation of the framework and results obtained

Chapter 9 describes the conclusion, limitations, improvements and further work that can be carried out